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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/784,778	02/24/2004	Martin Dieterle	248692US0	2104
22850	7590	05/19/2005	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			WITHERSPOON, SIKARL A	
			ART UNIT	PAPER NUMBER

1621

DATE MAILED: 05/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/784,778	DIETERLE ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Sikarl A. Witherspoon	1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 16 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/24, 5/6, 12/16.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takata et al (US 4,438,217) and Arnold et al (US 6,395,936) in combination.

The instant claims are drawn to a process for partially oxidizing propene to acrolein under heterogeneous catalysis, wherein the starting reaction gas mixture comprises propene, molecular oxygen, and at least one inert gas, at a molar ratio of oxygen and propene of greater than one, over a fixed catalyst bed arranged in two reaction zones, A and B, wherein the temperature in zones A and B is from 290 to 380° C, and wherein the active composition is at least one multimetal oxide comprising molybdenum, iron and bismuth, wherein reaction zone A extends up to a conversion of propene of from 40 to 80 mol %, and on single pass of the starting gas mixture through the catalyst bed, the propene conversion is greater than 90 mol % and the selectivity if acrolein formation is greater than 90 mol %. The hourly space velocity of the propene is less than 160 l of propene per liter of fixed catalyst bed/ hour, and greater than 90 l of propene per liter of fixed catalyst bed/hour. The difference between the highest temperature in the reactions zone A and B is greater than 0° C.

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Takata et al teaches a process for the oxidation of propylene to acrolein (an acrylic acid) using an oxidic mixed-metal catalyst comprising molybdenum, bismuth and iron (abstract, and examples). Takata et al do not teach the catalyst being arranged in two separate reaction zones, nor the hourly velocity of propene as claimed herein.

Arnold et al, however, teaches a process for preparing acrolein by gas phase oxidation of propene over a fixed bed catalyst, wherein the gas starting mixture is passed with a propene loading of greater than or equal to 160l (STP)/L h, where in the catalyst is housed in two spatially successive reaction zones, A and B, wherein the temperature in B is kept higher than in zone A (abstract). Arnold et al also teach a molar ratio of oxygen to propene of greater than or equal to 1, and a propene conversion of at least 90 mol % in a single pass, and selectivity of acrolein of at least 90 mol % (col. 1, lines 4-17). The temperature range of zones A and B fall within or encompass the temperature range recited in the instant claims (col. 3, line 21 to col. 4, line 63).

In light of the combined reference teachings, the examiner purports that it would have been obvious to a person of ordinary skill in the art, at the time the present invention was made, to conduct the oxidation process taught by Takata et al, which employs the same mixed metal catalyst employed by Arnold et al, using the process conditions, i.e., dual zone, temperature, hourly space velocity, etc., taught by Arnold et al. One of ordinary skill would have been motivated to combine the reference teachings since both teach processes for oxidizing propene to acrolein, and Arnold et al teach

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higher conversion of propene, and high selectivity to acrolein, under their process conditions.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-8 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8, 16 and 21 of U.S. Patent No. 6,395,936. Although the conflicting claims are not identical, they are not patentably distinct from each other because the main difference is that the US Patent conducts the oxidation process at a hourly space velocity of at least 160 l(STP) of propene per liter of catalyst, while the instant process is conducted at an hourly space velocity between 90 and 160 l (STP) per liter of catalyst. However, the U.S. Patent teaches that various propene loadings have been known to be employed in such processes (col. 2, lines 7-41). Therefore, it would have been obvious to a person of ordinary skill in the art to modify the hourly space velocity of greater than or equal to 160, to a loading that is

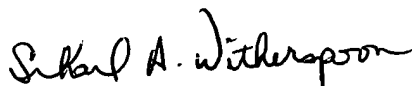
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higher or lower than that number in order to obtain an optimal feed ratio of propene through the fixed bed catalyst, so as to afford optimal conversion of propene and selectivity of acrolein.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikarl A. Witherspoon whose telephone number is 571-272-0649. The examiner can normally be reached on M-F 8:30-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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